

Radiation Hardened High Speed Fiber Optic Transceivers for Extreme Environments, Phase I

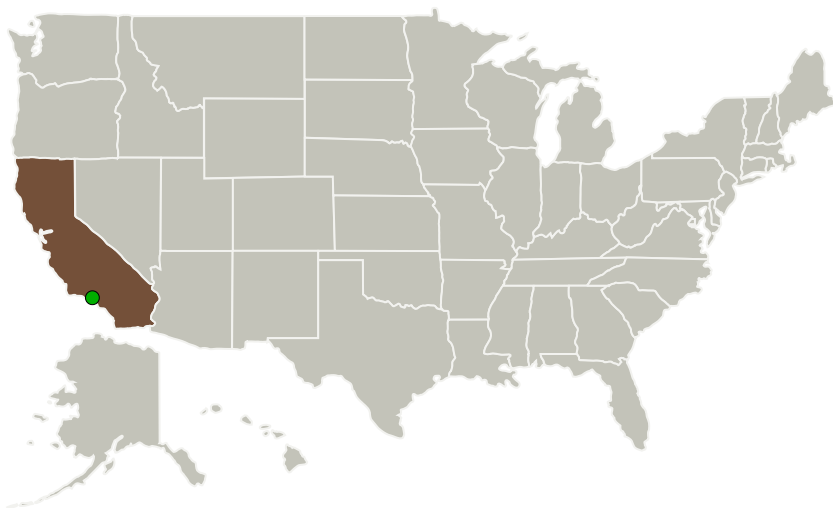
Completed Technology Project (2011 - 2011)



Project Introduction

We propose the development of transceiver offering wide bandwidth (1 Mbps to 10 Gbps) that operates in space environments targeted by NASA for robotic exploration. Fiber optics holds significant advantages over copper for high-speed data communications in space applications – it neither produces nor is affected by EMI, it offers ground isolation between electronic units, reduced power, reduced size and reduced weight. Mil-airframes are increasingly fielding fiber optic wiring infrastructures as a long-term solution to bandwidth upgrades (for example, Joint Strike Fighter, Raptor, F-18 and B-2) [1]. Space systems are coming on-line that route 100's of signals with bandwidths greater than 1 Gbps [2, 3 and see Potential Post Applications below]. As NASA engineers forecast the spacecraft trends for increasing science data throughput and on-board processing, the use of fiber optic data links between spacecraft subsystems has gained considerable interest.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Ultra Communications	Lead Organization	Industry	Vista, California
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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Primary U.S. Work Locations

California

Project Transitions



February 2011: Project Start



September 2011: Closed out

Closeout Summary: Radiation Hardened High Speed Fiber Optic Transceivers for Extreme Environments, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/140215>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Ultra Communications

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

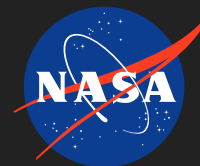
Charles Kuznia

Co-Investigator:

Charlie Kuznia

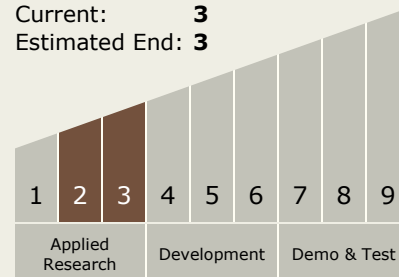
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Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
 - └ TX05.5 Revolutionary Communications Technologies
 - └ TX05.5.3 Hybrid Radio and Optical Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System